REGION 6
DELIVERABLE SIGN-OFF SHEET

TDD No.: TO-
TASK No.:
TASK/SITE: Site-Specific UFP QAPP – Hurricane Harvey Response Action Site
DCN: USEPA Region 6 RSTxxxxx

Principal Author(s)

_____ _____
xxxxxxxx Date

Technical Editor/ Peer Review

_____ _____
xxxxxxxx Date

Approval (QA/QC Specialist)

_____ _____
xxxxxxxx Date

August 31, 2017

Eric Delgado, On-Scene Coordinator
U.S. Environmental Protection Agency, Region 6
Response and Prevention Branch
TX

EPA CONTRACT NO:
TDD NO: TO-
DOCUMENT CONTROL NO:
SUBJECT: SITE-SPECIFIC UFP QUALITY ASSURANCE PROJECT PLAN– HURRICANE HARVEY RESPONSE ACTION SITE, 10625 Fallstone Rd., HARRIS COUNTY, HOUSTON, TEXAS

Dear Mr.

Enclosed please find the Site-Specific Uniform Federal Policy (UFP) Quality Assurance Project Plan (QAPP) for the soil and water sampling event to be conducted at the Hurricane Harvey Response Effort Site located in, Harris County, Houston, Texas beginning on August 31, 2017.

If you have any questions or comments, please do not hesitate to contact me at (xxx) xxx-xxxx.

Sincerely,

xxxxxxxxxxxx

xxxxxxxxx
xxxxxxxx Project Manager

Enclosure
cc: TDD File No.: TO-

SITE-SPECIFIC UFP QUALITY ASSURANCE PROJECT PLAN

HURRICANE HARVEY RESPONSE ACTION SITE

10625 Fallstone Rd, Harris County, Houston, Texas 77099
SSID No: xxxx

Prepared By:

DC No.: EPA Region 6 RST
TDD No.: TO-
EPA Contract No.: EP-

August 2017

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LIST OF ATTACHMENTS

LIST OF ACRONYMS

ADR	Automated Data Review
ANSETS	Analytical Services Tracking System
AOC	Acknowledgment of Completion
ASTM	American Society for Testing and Materials
CEO	Chief Executive Officer
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CLP	Contract Laboratory Program
CFM	Contract Financial Manager
CO	Contract Officer
COI	Conflict of Interest
COO	Chief Operations Officer
CRDL	Contract Required Detection Limit
CRTL	Core Response Team Leader
CRQL	Contract Required Quantitation Limit
CQLOSS	Corporate Quality Leadership and Operations Support Services
CWA	Clean Water Act
DCN	Document Control Number
DESA	Division of Environmental Science and Assessment
DI	Deionized Water
DPO	Deputy Project Officer
DQI	Data Quality Indicator
DQO	Data Quality Objective
EM	Equipment Manager
EDD	Electronic Data deliverable
ENVL	Environmental Unit Leader
EPA	Environmental Protection Agency
ERT	Environmental Response Team
FASTAC	Field and Analytical Services Teaming Advisory Committee
GC/ECD	Gas Chromatography/Electron Capture Detector
GC/MS	Gas Chromatography/Mass Spectrometry
HASP	Health and Safety Plan
HRS	Hazard Ranking System
HSO	Health and Safety Officer
ITM	Information Technology Manager
LEL	Lower Explosive Limit
MSA	Mine Safety Appliances
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NELAC	National Environmental Laboratory Accreditation Conference
NELAP	National Environmental Laboratory Accreditation Program
NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute of Standards and Technology
OSC	On-Scene Coordinator
OSHA	Occupational Safety and Health Administration

LIST OF ACRONYMS (Concluded)

OSWER	Office of Solid Waste and Emergency Response
PARCCS	Precision, Accuracy, Representativeness, Completeness, Comparability, Sensitivity
PAH	Polynuclear Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PIO	Public Information Officer
PM	Program Manager
PO	Project Officer
PRP	Potentially Responsible Party
PT	Proficiency Testing
QA	Quality Assurance
QAL	Quality Assurance Leader
QAPP	Quality Assurance Project Plan
QMP	Quality Management Plan
QA/QC	Quality Assurance/Quality Control
QC	Quality Control
RC	Readiness Coordinator
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
RSCC	Regional Sample Control Coordinator
RST	Removal Support Team
SARA	Superfund Amendments and Reauthorization Act
SEDD	Staged Electronic Data Deliverable
SOP	Standard Operating Practice
SOW	Statement of Work
SPM	Site Project Manager
START	Superfund Technical Assessment and Response Team
STR	Sampling Trip Report
TAL	Target Analyte List
TCL	Total Compound List
TDD	Technical Direction Document
TDL	Technical Direction Letter
TO	Task Order
TQM	Total Quality Management
TSCA	Toxic Substances Control Act
UFP	Uniform Federal Policy
VOA	Volatile Organic Analysis

CROSSWALK

The following table provides a "cross-walk" between the QAPP elements outlined in the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP Manual), the necessary information, and the location of the information within the text document and corresponding QAPP Worksheet. Any QAPP elements and required information that are not applicable to the project are circled.

QAPP Element(s) and Corresponding Section(s) of UFP-QAPP Manual		Required Information	Crosswalk to QAPP Section	Crosswalk to QAPP Worksheet No.
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2.6	Project Quality Objectives and Measurement Performance Criteria 2.6.1 Development of Project Quality Objectives Using the Systematic Planning Process 2.6.2 Measurement Performance Criteria	- Site-Specific PQOs - Measurement Performance Criteria	3	11 12
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QAPP Element(s) and Corresponding Section(s) of UFP-QAPP Manual	Required Information	Crosswalk to QAPP Section	Crosswalk to QAPP Worksheet No.
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QAPP Element(s) and Corresponding Section(s) of UFP-QAPP Manual	Required Information	Crosswalk to QAPP Section	Crosswalk to QAPP Worksheet No.
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QAPP Worksheet #1: Title and Approval Page

Title: Site-Specific UFP Quality Assurance Project Plan
Site Name/Project Name: Hurricane Harvey Response Action Site
Site Location: 10625 Fallstone Rd., Harris County, Houston, Texas 77099
Revision Number: 00
Revision Date: Not Applicable

Lead Organization

Eric Delgado
Federal On Scene Coordinator
USEPA Region 6
214.437.9809
[HYPERLINK "mailto:Delgado.Eric@epa.gov"]

Preparer's Name and Organizational Affiliation

31 August 2017

Preparation Date (Day/Month/Year)

Site Project Manager: _____
Signature

Printed Name/Organization/Date

QA Officer/Technical Reviewer: _____
Signature

Printed Name/Organization/Date

EPA, Region 6 On-Scene Coordinator (OSC): _____
Signature

xxxxxxxx/EPA, Region 6

Printed Name/Organization/Date

EPA, Region 6 Quality Assurance Officer QAO): _____
Signature

Printed Name/Organization/Date

Document Control Number:

QAPP Worksheet #2: QAPP Identifying Information

Site Name/Project Name: Hurricane Harvey Response Action Site
Site Location: 10625 Fallstone Rd., Harris County, Houston, Texas 77099
Operable Unit: 00
Title: Site-Specific UFP Quality Assurance Project Plan
Revision Number: 00
Revision Date: Not Applicable

1. **Identify guidance used to prepare QAPP:**
   Uniform Federal Policy for Quality Assurance Project Plans and SW-846 Method 8260C and Method 8270D.

2. **Identify regulatory program:** USEPA, Region 6

3. **Identify approval entity:** USEPA, Region 6

4. **Indicate whether the QAPP is a generic or a site-specific QAPP:** Site Specific

5. **List dates of scoping sessions that were held:** August ?, 2017

6. **List dates and titles of QAPP documents written for previous site work, if applicable:**

   Site-Specific UFP QAPP

7. **List organizational partners (stakeholders) and connection with lead organization:**

   None

8. **List data users:** USEPA, Region 6 (see Worksheet #4 for individuals)

9. **If any required QAPP elements and required information are not applicable to the project, then provide an explanation for their exclusion below:**

   None

10. **Document Control Number:**

QAPP Worksheet #3: Distribution List

[List those entities to which copies of the approved site-specific QAPP, subsequent QAPP revisions, addenda, and amendments are sent]

QAPP Recipient	Title	Organization	Telephone Number	Fax Number	E-mail Address	Document Control Number
Eric Delgado	OSC	EPA, Region 6	214.437.9809		[HYPERLINK "mailto:Delgado.Eric@epa.gov"]	

QAPP Worksheet #4: Project Personnel Sign-Off Sheet

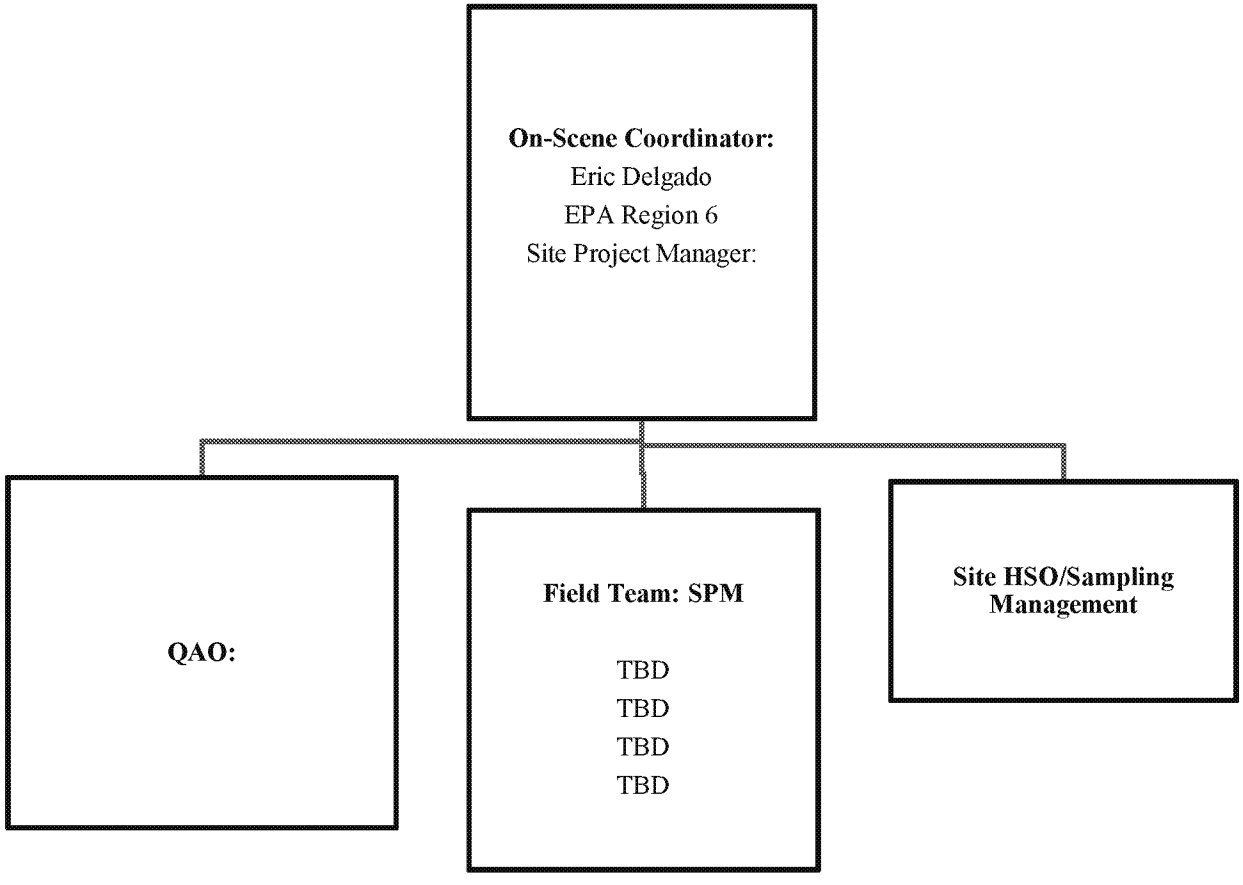
[Copies of this form signed by key project personnel from each organization to indicate that they have read the applicable sections of the site-specific QAPP and will perform the tasks as described; add additional sheets as required. Ask each organization to forward signed sheets to the central project file.]

Organization: xxxxxxxxx

Project Personnel	Title	Telephone Number	Signature	Date QAPP Read
Eric Delgado	EPA, Region 6, OSC	(214) 437-9809		

QAPP Worksheet #5: Project Organizational Chart

Identify reporting relationship between all organizations involved in the project, including the lead organization and all contractor and subcontractor organizations. Identify the organizations providing field sampling, on-site and off-site analysis, and data review services, including the names and telephone numbers of all project managers, project team members, and/or project contacts for each organization.



Acronyms:

EPA – U.S. Environmental Protection Agency
HSO – Health & Safety Officer
OSC – On-Scene Coordinator
TBD – To Be Determined
QAO – Quality Assurance Officer
RST 3 – Removal Support Team 3
SPM – Site Project Manager
ESAT- Environmental Services Assistant Team

QAPP Worksheet #6: Communication Pathways

Communication Drivers	Responsible Entity	Name	Phone Number	Procedure
Point of contact with EPA OSC				All technical, QA and decision-making matters in regard to the project (verbal, written or electronic)
Adjustments to QAPP				QAPP approval dialogue
Health and Safety On-Site Meeting				Explain/review site hazards, personnel protective equipment, hospital location, etc.

EPA – U.S. Environmental Protection Agency
HSO – Health and Safety Officer
OSC – On-Scene Coordinator
QA – Quality Assurance
QAPP – Quality Assurance Project Plan
SPM – Site Project Manager

QAPP Worksheet #7: Personnel Responsibilities and Qualifications Table

Name	Title	Organizational Affiliation	Responsibilities	Education and Experience Qualifications
Eric Delgado	USEPA OSC	EPA, Region 6	All project coordination, direction and decision making.	Not Applicable
TBD				
TBD				
TBD				
TBD				

TBD – To Be Determined

QAPP Worksheet #8: Special Personnel Training Requirements Table

Project Function	Specialized Training By Title or Description of Course	Training Provider	Training Date	Personnel / Groups Receiving Training	Personnel Titles / Organizational Affiliation	Location of Training Records / Certificates[1]
[Specify location of training records and certificates for samplers]						
QAPP Training	This training is presented to all RST 3 personnel to introduce the provisions, requirements, and responsibilities detailed in the UFP QAPP. The training presents the relationship between the site-specific QAPPs, SOPs, work plans, and the Generic QAPP. QAPP refresher training will be presented to all employees following a major QAPP revision.		As needed	All RST 3 field personnel upon initial employment and as refresher training		
Health and Safety Training	Health and safety training will be provided to ensure compliance with Occupational Safety and Health Administration (OSHA) as established in 29 CFR 1910.120.		Yearly at a minimum	All Employees upon initial employment and as refresher training every year		
Others	Scribe, ICS 100 and 200, and Air Monitoring Equipment Trainings provided to all employees		Upon initial employment and as needed			
	Dangerous Goods Shipping		Every 2 years			

All team members are trained in the concepts and procedures in recognizing opportunities for continual improvement, and the approaches required to improve procedures while maintaining conformance with legal, technical, and contractual obligations.

[1] All RST 3 members, including subcontractor's, certifications are in possession of the RST 3 HSO.

QAPP Worksheet #9: Project Scoping Session Participants Sheet

Site Name/Project Name: Hurricane Harvey Response Action Site
Site Location: 10625 Fallstone Rd., Harris County, Houston, Texas 77099
Operable Unit: 00
Date of Sessions: August, 2017
Scoping Session Purpose: To discuss questions, comments, and assumptions regarding technical issues involved with the Removal Action sampling activities for the Site.

Name	Title	Affiliation	Phone #	E-mail Address	*Project Role
Eric Delgado	EPA OSC	EPA, Region 6	(214)-437-9809	Delgado.Eric@epa.gov	OSC

Comments/Decisions:

Action Items: The soil and water samples are being analyzed by EPA's Portable High Throughput Integrated Laboratory Identification System (PHILIS) laboratory and no request form is necessary.

Consensus Decisions: The sampling activities will begin on September 1, 2017 and will conclude at a time to be determined later.

QAPP Worksheet #10: Problem Definition

PROBLEM DEFINITION

xxxxxxxxxxxxxxxxxxxx

SITE HISTORY/CONDITIONS

xxxxxxxxxxxxxxxxxxxxxxxx

PROJECT DESCRIPTION

xxxxxxxxxxxxxxxxxxxxxxxxx

PROJECT DECISION STATEMENTS

xxxxxxxxxxxxxxxxxxxxxxxx

QAPP Worksheet #11: Project Quality Objectives/Systematic Planning Process Statement

Overall project objectives include: Take samples and submit to the laboratory to locate contaminated locations.

Who will use the data? Data will be used by the EPA OSC.

What will the data be used for? The data will be used to characterize current soil conditions on-site and to evaluate the suitability for residential or business use.

What types of data are needed?

Matrix:	Soil and Water
Type of Data:	Definitive Data
Analytical Techniques:	On-site laboratory analyses
Parameters:	SW846 Method 8260C VOCs and Method 8270D SVOCs.
Type of Sampling Equip.:	EnCore Samplers (5 gram), 4 oz. glass jars for % moisture for soil samples, water samples will be taken in 40 ml volatile vials. Semivolatiles will be taken in 8 oz glass jars for the moisture and analysis. Water samples will be taken in 500 mL or 1 L amber bottles with Teflon lids.

Access Agreement: Obtained by EPA OSC.
Sampling locations: Sample locations will be identified by the EPA OSC.

How much data are needed?
Soil and water samples will be collected from various locations as directed by the OSC.

How "good" does the data need to be in order to support the environmental decision?
Sampling/analytical measurement performance criteria for Precision, Accuracy, Representativeness, Completeness, and Comparability (PARCC) parameters will be established. Soil samples will be collected for definitive data, MS/MSD and field duplicate will be collected at 1 per 20 samples.

Where, when, and how should the data be collected/generated?

The subsurface soil samples will be collected from the surface and various depths at the Site as directed by the EPA OSC; exact borehole locations to be determined in the field. Water samples will be taken as directed by the EPA OSC>

Who will collect and generate the data?

RST 3 personnel will collect the soil and water samples. The samples will be submitted to EPA's Portable High Throughput Integrated Laboratory Identification System (PHILIS) laboratory for VOC by 8260C and SVOC by 8270D analysis.

QAPP Worksheet #11: Project Quality Objectives/Systematic Planning Process Statement (Continued)

How will the data be reported?
All data will be reported by the PHILIS laboratory (Preliminary and Electronic).The Site Project Manager will provide a chronology of events, photolog, Status Reports, Maps/Figures including private Mark-Out below grade utility location map, Analytical Report, and Data Validation Report to the EPA OSC.

How will the data be archived? Electronic data deliverables will be archived in the Scribe database.

QAPP Worksheet #12: Measurement Performance Criteria Table
Worksheet # 12A: Volatiles - Organics/SW 846, Method 8260C

Matrix	Aqueous/Soil
Analytical Group	VOA
Concentration Level	Low/Medium/High

Sampling Procedure[1]	Analytical Method/SOP[2]	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
	SW846, Method 8260C SOP L-A-101 Rev 7 and SW846, Method 8270D SOP L-A-201 Rev 7	Precision	% RPD <30	LCS	A
		Accuracy	Average Recovery 50-140% Acceptance criteria in LIMS		
		Accuracy	Factor of two(-50% to + 100%) from the initial/continuing calibration	Internal standards	A
		Accuracy	Compound Specific average range: 50 - 140%	Matrix spike/Matrix Spike Duplicate	A
		Precision	% RPD < 30	RPD	
		Accuracy	Limits 30%-140%(Aqueous); 70%-140% (soil/sediment) Acceptance criteria in LIMS	Surrogate Compounds	A
		Precision	% RPD < 30 (water) <50 (soil)	Field Duplicate	A
		Accuracy	< RL	Method Blank	A

All aqueous samples will be rinse blank samples

[1] Reference number from QAPP Worksheet #21

[2] Reference number from QAPP Worksheet #23 and #28

* Reference SW846 Method 8260C/VOA Analysis by Gas Chromatography/Mass Spectrometry SW-846 Method 8260C

Refer to SW 846 methods on [HYPERLINK "http://www.epa.gov/waste/hazard/testmethods/sw846/online/index.htm"]

QAPP Worksheet #12B: Measurement Performance Criteria Table

(UFP-QAPP Manual Section 2.6.2)
Complete this worksheet for each matrix, analytical group, and concentration level. Identify the data quality indicators (DQI), measurement performance criteria (MPC) and QC sample and/or activity used to assess the measurement performance for both the sampling and analytical measurement systems. Use additional worksheets if necessary. If MPC for specific DQI vary within an analytical parameter, i.e., MPC are analyte-specific, then provide analyte-specific MPC on an additional worksheet.

Matrix	Air
Analytical Group	
Concentration Level	

Sampling Procedure[1]	Analytical Method/SOP[2]	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
		Precision (field)	±30% D*	Field Duplicate -	S & A
		Accuracy (field)	No analyte > CRQL*	Field Blank	S & A
		Precision (laboratory)	±30% D*	Laboratory Replicate Sample	A
		Accuracy (laboratory)	Acceptance criteria in LIMS %R*	Laboratory Audit Standard	A
		Accuracy (laboratory)	No analyte > CRQL*	Laboratory Method Blank	A

[1]Reference number from QAPP Worksheet #21.
[2]Reference number from QAPP Worksheet #23.

QAPP Worksheet #13: Secondary Data Criteria and Limitations Table

Any data needed for project implementation or decision making that are obtained from non-direct measurement sources such as computer databases, background information, technologies and methods, environmental indicator data, publications, photographs, topographical maps, literature files and historical data bases will be compared to the DQOs for the project to determine the acceptability of the data. Thus, for example, analytical data from historical surveys will be evaluated to determine whether they satisfy the validation criteria for the project and to determine whether sufficient data was provided to allow an appropriate validation to be done. If not, then a decision to conduct additional sampling for the site may be necessary.

Secondary Data	Data Source (Originating Organization, Report Title, and Date)	Data Generator(s) (Originating Org., Data Types, Data Generation/ Collection Dates)	How Data May Be Used (if deemed usable during data assessment stage)	Limitations on Data Use

QAPP Worksheet #14: Summary of Project Tasks

Sampling Tasks:

Soil, sediment, and water samples will be collected from multiple locations. Sample will be collected from each location using standard field protocol.

Analysis Tasks:

VOCs– Soil and aqueous (rinse blank and trip blank)– EPA SW846 Method 8260C
Percent Moisture - soil

Quality Control Tasks:

QA/QC samples will include the collection of one duplicate soil sample at the ratio of 1 per 20 samples, one aqueous rinsate blank per day, and one trip blank per day.

Data Management Tasks:

Activities under this project will be reported in status and reports and other deliverables (*e.g.*, analytical reports, final reports) described herein. Activities will also be summarized in appropriate format for inclusion in monthly and annual reports.

The following deliverables will be provided under this project:

Report: Report will be submitted to the EPA OSC within two weeks of receiving analytical data.

Maps/Figures: Maps depicting site layout and sample locations will be included in the trip report, as appropriate.

Documentation and Records:

All sample documents will be completed legibly, in ink. Any corrections or revisions will be made by lining through the incorrect entry and by initialing the error.

Field Logbook: The field logbook is essentially a descriptive notebook detailing site activities and observations so that an accurate account of field procedures can be reconstructed in the writer's absence. Field logbook will be bound and paginated. All entries will be dated and signed by the individuals making the entries, and should include (at a minimum) the following:

1. Site name and project number
2. Name(s) of personnel on-site
3. Dates and times of all entries (military time preferred)
4. Descriptions of all site activities, site entry and exit times
5. Noteworthy events and discussions

Q

QAPP Worksheet #14: Summary of Project Tasks (Continued)

6. Weather conditions

7. Site observations
8. Sample and sample location identification and description*
9. Subcontractor information and names of on-site personnel
10. Date and time of sample collections, along with COC information
11. Record of photographs
12. Site sketches
13. GPS Coordinates for each sample location

* The description of the sample location will be noted in such a manner as to allow the reader to reproduce the location in the field at a later date.

Sample Labels: Sample labels will clearly identify the particular sample, and should include the following:

1. Site/project number.
2. Sample identification number.
3. Sample collection date and time.
4. Designation of sample (grab or composite).
5. Sample preservation.
6. Analytical parameters.
7. Name of sampler.

Sample labels will be written in indelible ink and securely affixed to the sample container. Tie-on labels can be used if properly secured.

Custody Seals: Custody seals demonstrate that a sample container has not been tampered with or opened. The individual in possession of the sample(s) will sign and date the seal, affixing it in such a manner that the container cannot be opened without breaking the seal. The name of this individual, along with a description of the sample packaging, will be noted in the field logbook.

Assessment/Audit Tasks: No performance audit of field operations is anticipated at this time. If conducted, performance and system audit will be in accordance with the project plan.

Data Review Tasks: Soil and aqueous data will be validated by Weston Solutions, Inc. data validation personnel. Soil Data will be verified by RST 3 data validation personnel and air data will be validated by ESAT data validators.

Definitive data projects: The data generated under this QA/QC Sampling Plan will be evaluated according to guidance in the Uniform Federal Policy for Implementing Environmental Quality Systems: Evaluating, Assessing and Documenting Environmental Data Collection and Use Programs Part 1: UFP-QAPP (EPA-505-B-04-900A, March 2005); Part 2B: Quality Assurance/Quality Control Compendium: Minimum QA/QC Activities (EPA-505-B-04-900B, March 2005).

QAPP Worksheet #14: Summary of Project Tasks (Continued)

Laboratory analytical results will be assessed by the data reviewer for compliance with required precision, accuracy, completeness, representativeness, and sensitivity

QAPP Worksheet #15A: Reference Limits and Evaluation Table

Matrix: Soil and Water
Analytical Group: Compound List Volatile Organic Compounds
Concentration Level: Low Level

Analyte	CAS Number	Project Action Limits*	Project Quantitation Limit	Method 8260C Soil Low Quantitation Level mg/kg	Method 8260C Water Low Quantitation Level mg/L
Dichlorodifluoromethane	75-71-8	EPA Removal Management Levels (RMLs) for Industrial Soil See Attachment D	NS	0.005	0.002
Chloromethane	74-87-3		NS	0.005	0.002
Vinyl Chloride	75-01-4		NS	0.005	0.002
Bromomethane	74-83-9		NS	0.010	0.002
Chloroethane	75-00-3		NS	0.005	0.002
Trichlorofluoromethane	75-69-4		NS	0.005	0.002
Acetone	67-64-1		NS	0.025	0.010
1,1-Dichloroethene	75-35-4		NS	0.005	0.002
t-Butyl alcohol	75-65-0		NS	0.025	0.010
Methylene chloride	75-09-2		NS	0.010	0.004
Methyl tert-butyl ether	1634-04-4		NS	0.005	0.002
trans-1,2-Dichloroethene	156-60-5		NS	0.005	0.002
Diisopropyl ether	108-20-3		NS	0.005	0.002
2-Butanone	78-93-3		NS	0.025	0.010
Ethyl tert-butyl ether	637-92-3		NS	0.005	0.002
1,1-Dichloroethane	75-34-3		NS	0.005	0.002
cis-1,2-Dichloroethene	156-59-2		NS	0.005	0.002
2,2-Dichloropropane	594-20-7		NS	0.005	0.002
Bromochloromethane	74-97-5		NS	0.005	0.002
Chloroform	67-66-3		NS	0.005	0.002
1,1,1-Trichloroethane	71-55-6		NS	0.005	0.002
1,1-Dichloropropene	563-58-6		NS	0.005	0.002
Carbon tetrachloride	56-23-5		NS	0.005	0.002
tert-Amyl methyl ether	994-05-8		NS	0.005	0.002
Benzene	71-43-2		NS	0.005	0.002
Trichloroethene	79-01-6		NS	0.005	0.002
1,2-Dichloropropane	78-87-5		NS	0.005	0.002
Dibromomethane	74-95-3		NS	0.005	0.002
Bromodichloromethane	75-27-4		NS	0.005	0.002

QAPP Worksheet #15A: Reference Limits and Evaluation Table

Matrix: Soil and Water
Analytical Group: 8260C Volatile List Organic Compounds
Concentration Level: Low Levels

Analyte	CAS Number	Project Action Limits*	Project Quantitation Limit (mg/kg)	Analytical Method 8260C (Low) Quantitation Limits (mg/kg)	Analytical Method – 8260C (Medium) Quantitation Limits (mg/L)
4-Methyl-2-Pentanone	108-10-1	EPA Removal Management Levels (RMLs) for Industrial Soil See Attachment D	NS	0.025	0.010
cis-1,3-Dichloropropene	10061-01-5		NS	0.005	0.002
Toluene	108-88-3		NS	0.005	0.002
trans-1,3-Dichloropropene	10061-02-6		NS	0.01	0.002
1,1,2-Trichloroethane	79-00-5		NS	0.005	0.002
2-Hexanone	591-78-6		NS	0.025	0.010
1,3-Dichloropropane	142-28-9		NS	0.005	0.002
Tetrachloroethene	127-18-4		NS	0.005	0.002
Dibromochloromethane	124-48-1		NS	0.005	0.002
1,2-Dibromoethane	106-93-4		NS	0.005	0.002
Chlorobenzene	108-90-7		NS	0.005	0.002
1,1,1,2-Tetrachloroethane	630-20-6		NS	0.005	0.002
Ethyl benzene	100-41-4		NS	0.005	0.002
m,p-Xylenes	108-38-3		NS	0.010	0.004
o-Xylene	95-47-6		NS	0.005	0.002
Xylenes, Total			NS	0.015	0.006
Styrene	100-42-5		NS	0.005	0.002
Bromoform	75-25-2		NS	0.005	0.002
Isopropylbenzene	98-82-8		NS	0.005	0.002
1,1,2,2-Tetrachloroethane	96-18-4		NS	0.005	0.002
1,2,3-Trichloropropane	96-18-4		NS	0.005	0.002
Bromobenzene	108-86-1		NS	0.005	0.002
n-Propylbenzene	103-65-1		NS	0.005	0.002
2-Chlorotoluene	106-43-4		NS	0.005	0.002
1,3,5-Trimethylbenzene	108-67-8		NS	0.005	0.002
4-Chlorotoluene	106-43-4		NS	0.005	0.002
tert-Butylbenzene	98-06-6		NS	0.005	0.002
1,2,4-Trimethylbenzene	95-63-6		NS	0.005	0.002
sec-Butylbenzene	135-98-8		NS	0.005	0.002
p-Isopropyltoluene	99-87-6		NS	0.005	0.002
1,3-Dichlorobenzene	541-73-1		NS	0.005	0.002
1,4-Dichlorobenzene	106-46-7		NS	0.005	0.002
Butylbenzene	104-51-8		NS	0.005	0.002
1,2-Dichlorobenzene	95-50-1		NS	0.005	0.002
1,2-Dibromo-3-chloropropane	96-12-8		NS	0.005	0.002
1,2,4-Trichlorobenzene	120-82-1		NS	0.005	0.002
Hexachlorobutadiene	87-68-3		NS	0.005	0.002
Naphthalene	91-20-3		NS	0.005	0.002
1,2,3-Trichlorobenzene	87-61-6		NS	0.005	0.002

**Reference Source* NS – Not Specified

QAPP Worksheet #15B: Reference Limits and Evaluation Table

Matrix: Soil and Water
Analytical Group: Compound List Semi-Volatile Organic Compounds
Concentration Level: Low Level Soil Medium Level Water

Analyte	CAS Number	Project Action Limits*	Project Quantitation Limit	Method 8270D Soil Low Quantitation Level mg/kg	Method 8270D Water Low Quantitation Level mg/L
1,2,4-Trichlorobenzene	120-82-1	EPA Removal Management Levels (RMLs) for Industrial Soil See Attachment D	NS	0.083	0.025
1,2-Dichlorobenzene	95-50-1		NS	0.083	0.025
1,3-Dichlorobenzene	541-73-1		NS	0.083	0.025
1,4-Dichlorobenzene	106-46-7		NS	0.083	0.025
1-Methylnaphthalene	90-12-0		NS	0.083	0.025
2,4,5-Trichlorophenol	95-95-4		NS	0.083	0.025
2,4,6-Trichlorophenol	88-06-2		NS	0.083	0.025
2,4-Dichlorophenol	120-83-2		NS	0.083	0.025
2,4-Dimethylphenol	105-67-9		NS	0.083	0.025
2,4-Dinitrophenol	51-28-5		NS	0.167	0.050
2,4-Dinitrotoluene	121-14-2		NS	0.083	0.025
2,6-Dinitrotoluene	606-20-2		NS	0.083	0.025
2-Chloronaphthalene	91-58-7		NS	0.083	0.025
2-Chlorophenol	95-57-8		NS	0.083	0.025
2-Methyl-4,6-dinitrophenol	534-52-1		NS	0.083	0.025
2-Methylnaphthalene	91-57-6		NS	0.083	0.025
2-Methylphenol	95-48-7		NS	0.083	0.025
2-Nitroaniline	88-74-4		NS	0.083	0.025
2-Nitrophenol	88-75-5		NS	0.083	0.025
3/4-Methylphenol	106-44-5		NS	0.083	0.025
3-Nitroaniline	99-09-2		NS	0.083	0.025
4-Bromophenyl phenyl ether	101-55-3		NS	0.083	0.025
4-Chloro-3-methylphenol	59-50-7		NS	0.083	0.025
4-Chloroaniline	106-47-8		NS	0.083	0.025
4-Chlorophenyl phenyl ether	7005-72-3		NS	0.083	0.025
Trichloroethene	79-01-6		NS	0.083	0.025
1,2-Dichloropropane	78-87-5		NS	0.083	0.025
Dibromomethane	74-95-3		NS	0.083	0.025
Bromodichloromethane	75-27-4		NS	0.083	0.025
4-Nitroaniline	100-01-6		NS	0.083	0.025
4-Nitrophenol	100-02-7		NS	0.167	0.050
Acenaphthene	83-32-9		NS	0.083	0.025
Acenaphthylene	208-96-8		NS	0.083	0.025

QAPP Worksheet #15B: Reference Limits and Evaluation Table

Matrix: Soil and Water
Analytical Group: Compound List Semi-Volatile Organic Compounds
Concentration Level: Low Level Soil Medium Level Water

Analyte	CAS Number	Project Action Limits*	Project Quantitation Limit	Method 8270D Soil Low Quantitation Level mg/kg	Method 8270D Water Low Quantitation Level mg/L
Aniline	62-53-3	EPA Removal Management Levels (RMLs) for Industrial Soil See Attachment D	NS	0.083	0.025
Anthracene	120-12-7		NS	0.083	0.025
Benzo(a)anthracene	56-55-3		NS	0.083	0.025
Benzo(a)pyrene	50-32-8		NS	0.083	0.025
Benzo(b)fluoranthene	205-99-2		NS	0.083	0.025
Benzo(g,h,i)perylene	191-24-2		NS	0.083	0.025
Benzo(k)fluoranthene	207-08-9		NS	0.083	0.025
Benzyl alcohol	100-51-6		NS	0.083	0.025
Bis(2-chloroethoxy) methane	111-91-1		NS	0.083	0.025
Bis(2-chloroethyl) ether	111-44-4		NS	0.083	0.025
Bis(2-chloroisopropyl) ether	108-60-1		NS	0.083	0.025
Bis(2-ethylhexyl) phthalate	117-81-7		NS	0.167	0.050
Butyl benzyl phthalate	85-68-7		NS	0.083	0.025
Carbazole	86-74-8		NS	0.083	0.025
Chrysene	218-01-9		NS	0.083	0.025
Dibenz(a,h)anthracene	53-70-3		NS	0.083	0.025
Dibenzofuran	132-64-9		NS	0.083	0.025
Diethyl phthalate	84-66-2		NS	0.083	0.025
Dimethyl phthalate	131-11-3		NS	0.083	0.025
Di-n-butyl phthalate	84-74-2		NS	0.083	0.025
Di-n-octyl phthalate	117-84-0		NS	0.167	0.050
Fluoranthene	206-44-0		NS	0.083	0.025
Fluorene	86-73-7		NS	0.083	0.025
Hexachlorobenzene	118-74-1		NS	0.083	0.025
Hexachlorobutadiene	87-68-3		NS	0.083	0.025
Hexachlorocyclopentadiene	77-47-4		NS	0.083	0.025
Hexachloroethane	67-72-1		NS	0.083	0.025
Indeno(1,2,3-cd)pyrene	193-39-5		NS	0.083	0.025
Isophorone	78-59-1		NS	0.083	0.025
Naphthalene	91-20-3		NS	0.083	0.025
Nitrobenzene	98-95-3		NS	0.083	0.025
N-Nitrosodi-n-propylamine	621-64-7		NS	0.083	0.025
Pentachlorophenol	87-86-5		NS	0.083	0.025
Phenanthrene	85-01-8		NS	0.083	0.025
Phenol	108-95-2		NS	0.083	0.025
Pyrene	129-00-0		NS	0.083	0.025

QAPP Worksheet #16: Project Schedule/Timeline Table

Activities	Organization	Dates (MM/DD/YY)		Deliverable	Deliverable Due Date
		Anticipated Date(s) of Initiation	Anticipated Date of Completion		
Preparation of QAPP	RST 3 Contractor SPM	*Prior to sampling date	8/25/17	QAPP	9/01/17
Review of QAPP	RST 3 Contractor QAO and/or Group Leader	Prior to sampling date	8/26/17	Approved QAPP	TBD
Preparation of HASP	RST 3 Contractor SPM	Prior to sampling date	8/30/17	HASP	8/30/17
Procurement of Field Equipment	RST 3 Contractor SPM and/or Equipment Officer	Prior to sampling date	8/25/17	NA	NA
Laboratory Request	Not Applicable	Prior to sampling date	8/22/17	CLP Request Form	NA
Field Reconnaissance/Access	RST 3 Contractor SPM; or EPA Region II OSC	NA	NA	NA	NA
Collection of Field Samples	RST 3 Contractor SPM	9/6/17	9/8/17	NA	NA
Laboratory Electronic Data Received	PHILIS Laboratory	7 days from receipt of samples	7 days from receipt of samples	Preliminary Data	--
Laboratory Package Received	CLP Laboratory (Air)	14 days from receipt of samples	14 days from receipt of samples	Hard Copy Data Package	--
Validation of Laboratory Results	Non-CLP Laboratory	TBD	TBD	NA	--
Data Evaluation/ Preparation of Final Report	RST 3 Contractor SPM	TBD	TBD	Final Report	9/30/17

NA – Not Applicable

QAPP Worksheet #17: Sampling Design and Rationale

Sampling Tasks:

RST 3 is tasked with collecting up to 40 subsurface soil samples, including QA/QC, at depths 5 to 14 feet below ground surface. Eight air samples will be collected, seven from the SVE system (including one duplicate) and one ambient air sample. The soil samples will be collected for Method 8260C VOCs analysis including 1,2,3-TCP. The air samples will be collected for TO-15 + 1,2,3-TCP analysis.

Soil sampling activities will be conducted in accordance with guidelines outlined in EPA/ERT Soil Sampling SOP #2012. Soil samples will be collected at up to 40 locations on Site. RST 3 will procure the services of a Geoprobe®, to advance up to 40 borings on-site with samples being taken at depths determined by the OSC during the field work. Method 8260C-VOCs including 1,2,3-TCP samples will be immediately collected utilizing Encore samplers. Samples must be shipped to the laboratory at the end of each day to meet the required holding time for Encore® samples.

Air samples will be collected in accordance with guidelines outline in EPA/ERT # 1704, Summa Canister Sampling

All stainless-steel equipment and the Geoprobe® shoe involved in field-sampling activities will be decontaminated in accordance to EPA/ERT SOP #2006 prior to and subsequent to sampling. Decontamination of sampling equipment will be conducted as follows:

1. Alconox detergent and potable water scrub.
2. Potable water rinse.
3. Deionized water rinse.
4. 10% Nitric Acid rinse.
5. Deionized water rinse.
6. A hexane rinse (pesticide-grade or better).
7. Air dry (sufficient time will be allowed for the equipment to completely dry).
8. Deionized water rinse and air dry.
9. Wrap or cover exposed ends of sampling equipment with aluminum foil (shiny side out) for transport and handling.

Rinsate blank samples will be collected at a rate of one per day by pouring deionized water over the Geoprobe® shoe and then collected in 40 mL VOA vials. Trip Blanks will be provided by the laboratory and returned at a rate of one per day.

QAPP Worksheet #17: Sampling Design and Rationale (Continued)

The following laboratories will provide the analyses indicated:

Lab Name/Location	Sample Type	Parameters
PHILIS Laboratory	Water and Soil	Method 8260C VOCs Method 8270D

Lab Name/Location	Sample Type	Parameters
TBD	Air	TBD

QAPP Worksheet #18: Sampling Locations and Methods/SOP Requirements Table

Matrix	Sampling Location(s)	Units	Analytical Group(s)	Concentration Level	No. of Samples (identify field duplicates)	Sampling SOP Reference	Rationale for Sampling Location
Soil	TBD	µg/Kg or mg/Kg	Method 8260C VOC Method 8270D SVOC	Low/Medium	TBD	EPA ERT SOP #: 2001, 2012,	Site Contamination Investigation; Clean Confirmation
Air	TBD	ppbv or mg/m3	TO-15 + 1,2,3-Trichloropropane	Medium/High	8	EPA ERT SOP #: 1704	Evaluation of SVE system performance
Aqueous[1]	TBD	µg/Kg	Method 8260C Method 8270D	Low	TBD	EPA ERT SOP#: 2005	Adequacy of decontamination procedures

Aqueous[1] samples are rinse blank samples and trip blank samples
NA – Not applicable
The website for EPA ERT SOPs is: [HYPERLINK "http://www.ert.org/mainContent.asp?section=Products&subsection=List"]

QAPP Worksheet #19: Analytical SOP Requirements Table

Matrix	Number of Samples	Analytical Group [Lab Assignment]	Concentration Level	Analytical and Preparation Method/SOP Reference	Sample Volume	Containers (number, size, and type)	Preservation Requirements	Maximum Holding Time (preparation/ analysis)
Soil	TBD	VOCs SVOCs	Low/Medium	EPA SW846 Method 8260C EPA SW846 Method 8270D	30 grams	3- 120 ml jars	Cool to 4°C	7 days
Air	TBD	TO-15	Low/Medium	TO-15 SIM	6 liters	Summa canister	NA	30 days
Aqueous[1]	TBD	VOCs SVOCs	Low/Medium	EPA SW846 Method 8260C EPA SW846 Method 8270D	120 ml	3-40 ml VOA	HCL + Cool to 4°C	14 days

[1]Aqueous samples are rinse blank samples and Trip Blank samples.

QAPP Worksheet #20: Field Quality Control Sample Summary Table

Matrix	Analytical Group	Concentration Level	Analytical and Preparation SOP Reference	No. of Sampling Locations	No. of Field Duplicate Pairs	No. of Extra Volume Laboratory QC (e.g., MS/MSD) Samples[1]	No. of Rinsate Blanks	No. of Trip. Blanks	No of PE Samples	Total No. of Samples to Lab
Soil	VOCs SVOCs	Low/Medium	SW846 Method 8260C SW846 Method 8270D	TBD	1 per 20 samples	1 per 20 samples	0	1	NR	42
Air	TO-15	Low/Medium	TO-15 SIM	TBD	1	NR	NR	NR	NR	8
Aqueous	VOCs SVOCs	Low/Medium	SW846 Method 8260C SW846 Method 8270D	TBD	1 per 20 samples	1 per 20	NR	NR	NR	3

NR – Not required
Aqueous samples are rinse blank samples

QAPP Worksheet #21: Project Sampling SOP References Table

Reference Number	Title, Revision Date and/or Number	Originating Organization	Equipment Type	Modified for Project Work? (Y/N)	Comments
SOP#2001	General Field Sampling Guidelines (all media); Rev. 0.0 August 1994	EPA/OSWER/ERT	Site-Specific	N	None
SOP #:1704	Summa Canister Sampling, Revision 1.0, 12/21/2015	EPA/OSWER/ERT	SUMMA Canister with pressure gauge, wrench, Teflon tubing	N	None
SOP #2012	Soil Sampling, Rev 1.0, July 2001	EPA/OSWER/ERT	Site-Specific	N	None
SOP #2005	Quality Assurance/Quality Control Samples	EPA/OSWER/ERT	Site-Specific	N	None
SOP #2006	Sampling Equipment Decontamination (all media); Rev 0.0 August 1994	EPA/OSWER/ERT	Non-phosphate Detergent, Tap Water. Distilled/Deionized Water, 10% Nitric Acid, Solvent Rinse (Pesticide Grade)	N	N

See Attachment B for EPA ERT SOPs.

Note: The website for EPA ERT SOPs is: [HYPERLINK "http://www.ert.org/mainContent.asp?section=Products&subsection=List"]

QAPP Worksheet #22: Field Equipment Calibration, Maintenance, Testing, and Inspection Table

Field Equipment	Calibration Activity	Maintenance Activity	Testing/ Inspection Activity	Frequency	Acceptance Criteria	Corrective Action	Responsible Person	SOP Reference
MultiRAE Plus Incl. PID	Calibrate with Zero Air; LEL: 2.5% (50% LEL) O_2: 18% H_2S: 10 ppm CO: 50 ppm PID: 100 ppm Isobutylene	Check/ replace battery/ Clean tip or bulb if necessary	Bump Test	Prior to day's activities; anytime anomaly suspected	LEL: 48-52% LEL (2% LEL) O_2: 17-19% (1%) H_2S: 9-11 ppm (1 ppm) CO: 48-52 ppm (2 ppm) PID: 95-105 ppm Isobutylene (5 ppm)	Replace battery or Replace Unit	Equipment Vendor	--
[HYPERLINK "file:///\\\\fsed2data1\\PublicShare\\Smita%20Sumbaly\\Chemical_QAPP\\Field%20Equipment%20SOPs\\microPID_opsref.pdf"]	Calibrate with zero air, then span gas of 100 ppm methane	Check hydrogen remaining Check Internal Filter	Bump Test	Prior to day's activities; anytime anomaly suspected	+/- 5%	Refill Hydrogen canister or Replace Unit	Equipment Vendor	--
[HYPERLINK "file:///\\\\fsed2data1\\PublicShare\\Smita%20Sumbaly\\Chemical_QAPP\\Field%20Equipment%20SOPs\\Trimble%20-%20GeoXT%20Handheld.htm"]								

QAPP Worksheet #23: Analytical SOP References Table

Reference Number	Title, Revision Date, and/or Number	Definitive or Screening Data	Analytical Group	Instrument	Organization Performing Analysis	Modified for Project Work? (Y/N)*
[HYPERLINK "file:///C:\\Users\\jtravis\\AppData\\Local\\Microsoft\\Windows\\Temporary%20Internet%20Files\\Content.Outlook\\Chemical_QAPP\\Analytical%20Mehods\\TO-15.pdf"]	Determination Of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters And Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS)	Definitive	Gases	GC/MS	National Non-RAS Laboratory	N
L-A-101 Rev 7	[SEQ CHAPTER \h \r 1]Volatile Organics by Method 8260C	Definitive	Soil and Aqueous	GC/MS	PHILIS Laboratory	N
L-A-201 Rev 7	Semivolatile Organics by Method 8270D	Definitive	Soil and Aqueous	GC/MS	PHILIS Laboratory	N

QAPP Worksheet #24: Analytical Instrument Calibration Table

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference
GC/MS	See TO-15	Initial calibration: upon award of the contract, whenever the laboratory takes corrective action which may change or affect the initial calibration criteria (e.g., ion source cleaning or repair, column replacement, etc.), or if the continuing calibration acceptance criteria have not been met.	Initial calibration/ Continuing calibration: relative response factor (RRF) greater than or equal to minimum acceptable response factor listed in Table 5 of procedure; %RSD must be less than or equal to value listed in Table 5 of procedure. GC/MS Tuning: See ion abundance table in TO-15. Retention Time Evaluation: +/- 0.50 minute of the internal standard retention time in the associated calibration check verification	Initial calibration: inspect system for problems (e.g., clean ion source, change the column, service the purge and trap device), correct problem, re-calibrate. Continuing calibration: inspect system, recalibrate the instrument, reanalyze samples. GC/MS Tuning: inspect the system, identify problem. MS tune criteria must be met before calibration Retention time evaluation: re-calibrate and verify, re-analyze samples back to the last good calibration check verification	GC/MS Technician; Subcontractor Laboratory GC/MS Technician	TO-15

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference
GC/MS	See 8260C	Initial calibration: upon award of the contract, whenever the laboratory takes corrective action which may change or affect the initial calibration criteria (e.g., ion source cleaning or repair, column replacement, etc.), or if the continuing calibration acceptance criteria have not been met.	GC/MS See SOP L-A-101 Rev 7	See SOP L-A-101 Rev 7	Initial calibration: upon award of the contract, whenever the laboratory takes corrective action which may change or affect the initial calibration criteria (e.g., ion source cleaning or repair, column replacement, etc.), or if the continuing calibration acceptance criteria have not been met.	GC/MS
GC/MS	See 8270C	Initial calibration: upon award of the contract, whenever the laboratory takes corrective action which may change or affect the initial calibration criteria (e.g., ion source cleaning or repair, column replacement, etc.), or if the continuing calibration acceptance criteria have not been met.	GC/MS	GC/MS	See 8270D	Initial calibration: upon award of the contract, whenever the laboratory takes corrective action which may change or affect the initial calibration criteria (e.g., ion source cleaning or repair, column replacement, etc.), or if the continuing calibration acceptance criteria have

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference
						not been met.

QAPP Worksheet #25: Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table

Instrument/ Equipment	Maintenance Activity	Testing/Inspection Activity	Frequency	Acceptance Criteria	Corrective Action	Responsible Person	SOP Reference
GC/MS	See SOP L-A-101 Rev 7 or as per instrument manufacturer's recommendations	See SOP L-A-101 Rev 7 or as per instrument manufacturer's recommendations	See SOP L-A-101 Rev 7 or as per instrument manufacturer's recommendations	See SOP L-A-101 Rev 7	See SOP L-A-101 Rev 7	EPA CLP RAS Laboratory GC/MS Lead Chemist	SOP L-A-101 Rev 7
GC/MS	See TO-15; as per instrument manufacturer's recommendations	See TO-15; as per instrument manufacturer's recommendations	See TO-15; as per instrument manufacturer's recommendations	Acceptable re-calibration; see TO-15	Inspect the system, correct problem, re-calibrate and/or reanalyze samples.	EPA National Non-RAS Laboratory GC/MS Technician	TO-15

QAPP Worksheet #26: Sample Handling System

SAMPLE COLLECTION, PACKAGING, AND SHIPMENT
Sample Collection (Personnel/Organization): RST 3 Site Project Manager, Weston Solutions, Inc., Region II
Sample Packaging (Personnel/Organization): RST 3 Site Project Manager, Weston Solutions, Inc., Region II
Coordination of Shipment (Personnel/Organization): RST 3 Site Project Manager, Weston Solutions, Inc., Region II
Type of Shipment/Carrier: FedEx, Courier, and/or Hand-Delivered
SAMPLE RECEIPT AND ANALYSIS
Sample Receipt (Personnel/Organization): PHILIS Laboratory and CLP RAS Laboratory
Sample Custody and Storage (Personnel/Organization): PHILIS Laboratory and CLP RAS Laboratory
Sample Preparation (Personnel/Organization): PHILIS Laboratory and CLP RAS Laboratory
Sample Determinative Analysis (Personnel/Organization): PHILIS Laboratory and CLP RAS Laboratory
SAMPLE ARCHIVING
Field Sample Storage (No. of days from sample collection): All samples will be shipped same day or within 24 hours of collection
Sample Extract/Digestate Storage (No. of days from extraction/digestion): As per analytical methodology; see Worksheet #19
SAMPLE DISPOSAL
Personnel/Organization: PHILIS Laboratory and CLP RAS Laboratory
Number of Days from Analysis: Up to 60 days; Until analysis and QA/QC checks are completed; as per analytical methodology; see Worksheet #19.

QAPP Worksheet #27: Sample Custody Requirements

Sample Identification Procedures: Each sample will be labeled with the site identification code and a sample type letter code and number that depicts a specific location. Additional information such as depth, sampling round, date, etc. will be added. Examples of matrices are: SS=Soil Sample and LW= Liquid Waste.

Example sample locations:

1) Soil samples will be designated as: P001-SS01-0024-01 (Property P001, Soil Sample collected from location 01, Sample collected from 0 inches to 24 inches below ground surface (bgs), Sample number 01).
2) Air samples will be designated P001-SVEX-9-8-17-01 (Property P001, Sample collected from SVE port X, date, sample number 1

Location of the sample collected will be recorded in the project database and site logbook. Depending on the type of sample, additional information such as sampling round, date, time etc. will be added.

Field Sample Custody Procedures (sample collection, packaging, shipment, and delivery to laboratory): Each sample will be individually identified and labeled after collection, then sealed with custody seals and enclosed in a plastic cooler. The sample information will be recorded on chain-of custody (COC) forms, and the samples shipped to the appropriate laboratory via overnight delivery service or courier. Chain-of-custody records must be prepared in Scribe to accompany samples from the time of collection and throughout the shipping process. Each individual in possession of the samples must sign and date the sample COC Record. The chain-of-custody record will be considered completed upon receipt at the laboratory. A traffic report and chain-of-custody record will be maintained from the time the sample is taken to its final deposition. Every transfer of custody must be noted and signed for, and a copy of this record kept by each individual who has signed. When samples are not under direct control of the individual responsible for them, they must be stored in a locked container sealed with a custody seal. Specific information regarding custody of the samples projected to be collected on the weekend will be noted in the field logbook. The chain-of-custody record should include (at minimum) the following: 1) Sample identification number; 2) Sample information; 3) Sample location; 4) Sample date; 5) Sample Time; 6) Sample Type Matrix; 7) Sample Container Type; 8) Sample Analysis Requested; 9) Name(s) and signature(s) of sampler(s); and 10) Signature(s) of any individual(s) with custody of samples.

Laboratory Sample Custody Procedures (receipt of samples, archiving, and disposal): A sample custodian at the laboratory will accept custody of the shipped samples, and check them for discrepancies, proper preservation, integrity, etc. If noted, issues will be forwarded to the laboratory manager for corrective action. The sample custodian will relinquish custody to the appropriate department for analysis. At this time, no samples will be archived at the laboratory. Disposal of the samples will occur only after analyses and QA/QC checks are completed.

QAPP Worksheet #28: QC Samples Table
Worksheet # 28A: Volatile – Organics/SW 846 Method 8260B

(UFP-QAPP Manual Section 3.4)
Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limit exceed the measurement performance criteria, the data obtained may be unusable for making project decisions.

Matrix	Soil
Analytical Group	Target Compound List Volatile Organics
Concentration Level	Low/Medium/High (mg/kg)
Sampling SOP(s)	2012
Analytical Method/SOP Reference	SW 846 Method 8260C/[HYPERLINK "file:///C:\\Users\\sumbalys\\AppData\\Roaming\\Microsoft\\Word\\Data%20Validation%20SOPs\\SOP%20HW24%20FINAL%]
Sampler's Name	
Field Sampling Organization	TBD
Analytical Organization	PHILIS
No. of Sample Locations	TBD

/	Method/SOP QC Acceptance Limits		Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicato (DQI)
	No analyte > CRQL*		Suspend analysis unit source recertified	PHILIS Analyst	Accurac
	Analyte List	Historical data is stored in LIMS	Flag outliers, conjunction with other QC criteria.	PHILIS Analyst	Accurac
	Analyte List	Historical data is stored in LIMS	Flag outliers, conjunction with other QC criteria.	PHILIS Analyst	Precisio
	4-Bromofluorobenzene Toluene-d8 1,2-Dichloroethane-d4	Historical data is stored in LIMS	Check calculations and instruments, reanalyze affected samples	PHILIS Analyst	Accurac

* Laboratory spike entire list of compounds, but at the minimum, above compounds are require. For MS/MSD and LCS [SEQ CHAPTER \h \r 1]Laboratory can also use in house performance criteria

QAPP Worksheet #28: QC Samples Table – Continued
Worksheet # 28A: Volatile – Organics/SW 846 Method 8260B [cont'd]

Matrix	Soil
Analytical Group	Target Compound List Volatile Organics (cont'd)
Concentration Level	Low/Medium/High (mg/kg)
Sampling SOP(s)	2012
Analytical Method/SOP Reference	SW 846 Method 8260C/SOP# L-A-101
Sampler's Name	
Field Sampling Organization	TBD
Analytical Organization	PHILIS
No. of Sample Locations	TBD

Lab QC Sample:	Frequency/ Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Internal Standards	all samples	50-100% of area, ± 30 sec retention time shift	Check calculations and instruments, reanalyze affected samples.	PHILIS Analyst	Accuracy	50-100% of area, ± 30 sec retention time shift
LCS	1 per ≤ 20 samples; if requested	Historical data stored in LIMS %RPD < 30	Flag outliers if not possible to reanalyze.	PHILIS Analyst	Accuracy Precision	Historical data stored in LIMS %RPD < 30
Field Duplicate	1 per ≤ 20 samples; if requested	%RPD < 30 (aqueous) %RPD < 50 (soil)	Check calculation, and Flag outliers	PHILIS Analyst	Accuracy	% RPD < 30 (aqueous) % RPD < 50 (soil)

* Laboratory spike entire list of compounds, but at the minimum, above compounds are require. FOR MS/MSD and LCS [SEQ CHAPTER \h \r 1]Laboratory can also use in house performance criteria

QAPP Worksheet #28: QC Samples Table
Worksheet # 28A: Volatile – Organics/SW 846 Method 8260C [cont'd]

Matrix	Water (includes Rinsate Blank or Trip Blank)
Analytical Group	Table 15 Lists Volatile Organics
Concentration Level	Low/Medium (mg/L)
Sampling SOP(s)	2006
Analytical Method/SOP Reference	SW 846 Method 8260C/SOP# L-A-101
Sampler's Name	
Field Sampling Organization	TBD
Analytical Organization	PHILIS
No. of Sample Locations	TBD

Lab QC Sample:	**Frequency/ Number**	**Method/SOP QC Acceptance Limits**		**Corrective Action**	**Person(s) Responsible for Corrective Action**	**Data Quality Indicator (DQI)**	**Measurement Performance Criteria**	
[SEQ CHAPTER \h \r 1]Method Blank	1 every 12 hours	No analyte > CRQL*		Suspend analysis unit source recertified	PHILIS Analyst	Accuracy	No analyte > CRQL*	
* Matrix Spike and Laboratory Control Sample/ (Not Required)	1 per ≤ 20 samples; if requested	Analyte List	Historical data is stored in LIMS	Flag outliers, conjunction with other QC criteria.	PHILIS Analyst	Accuracy	Analyte List	Historical data is stored in LIMS
* Matrix Spike Duplicate/Laboratory Control Sample (Not Required)	1 per ≤ 20 samples; if requested	Analyte List	Historical data is stored in LIMS	Flag outliers, conjunction with other QC criteria.	PHILIS Analyst	Precision	Analyte List	Historical data is stored in LIMS

QAPP Worksheet #28: QC Samples Table – Continued
Worksheet # 28A: Volatile – Organics/SW 846 Method 8260C [cont'd]

Matrix	Water (Rinsate Blank or Trip Blank)
Analytical Group	Table 15 Lists Volatile Organics (cont'd)
Concentration Level	Low/Medium (mg/L)
Sampling SOP(s)	2006
Analytical Method/SOP Reference	SW 846 Method 8260C/SOP# L-A-101 Rev 7
Sampler's Name	
Field Sampling Organization	Weston Solutions, Inc.
Analytical Organization	Subcontracted NELAC Laboratory
No. of Sample Locations	

Lab QC Sample:	**Frequency/ Number**	**Method/SOP QC Acceptance Limits**		**Corrective Action**	**Person(s) Responsible for Corrective Action**	**Data Quality Indicator (DQI)**	**Measurement Performance Criteria**	
Surrogate Recovery	All Samples	4-Bromofluorobenzene Toluene-d8 1,2-Dichloroethane-d4	Historical data is stored in LIMS	Check calculations and instruments, reanalyze affected samples; up to 3 DMCs per sample may fail to meet necessary limits (follow SOP: HW-24 for qualifications)	PHILIS Analyst	Accuracy	4-Bromofluorobenzene Toluene-d8 1,2-Dichloroethane-d4	Historical data is stored in LIMS
Internal Standards	all samples	50-200% of area, ± 30 sec retention time shift		Check calculations and instruments, reanalyze affected samples; up to 3 DMCs per sample may fail to meet necessary limits (Section 11.3.4, Page D45/VOC of SOM01.2)	PHILIS Analyst	Accuracy	50-100% of area, ± 30 sec retention time shift	

* Laboratory spike entire list of compounds, but at the minimum, above compounds are require. FOR MS/MSD and LCS [SEQ CHAPTER \h \r 1]Laboratory can also use in house performance criteria.

Worksheet # 28B: Semivolatile – Organics/SW846 8270D

(UFP-QAPP Manual Section 3.4)
Complete a separate worksheet for each sampling technique, analytical method/SOP, matrix, analytical group, and concentration level. If method/SOP QC acceptance limit exceed the measurement performance criteria, the data obtained may be unusable for making project decisions.

Matrix	
Analytical Group	Volatile Compounds
Concentration Level	Low (ppbv)
Sampling SOP(s)	
Analytical Method/SOP Reference	TO-15
Sampler's Name	
Field Sampling Organization	Weston Solutions, Inc.
Analytical Organization	
No. of Sample Locations	

Lab QC Sample:	Frequency/ Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Laboratory Method Blank[SEQ CHAPTER \h \r 1]	1 per ≤ 20 samples	No analyte >CRQL	Suspend analysis unit source recertified	PHILIS Analyst	Accuracy	No analyte > CRQL
Laboratory Replicate Sample	1 per ≤ 20 samples	± 25%D	± 25%D	PHILIS Analyst	Precision	± 25%RPD
Laboratory Control Sample	1 per ≤ 20 samples	±30% R	Flag outliers	PHILIS Analyst	Accuracy	±30% R
Trip Blank[SEQ CHAPTER \h \r 1]	1 per ≤ 20 samples	No analyte >CRQL	Suspend analysis unit source recertified	PHILIS Analyst	Accuracy	No analyte > CRQL

Lab QC Sample:	Frequency/ Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Field Duplicate	1 per ≤ 20 samples	± 25%D	± 30 %D (water) 50% (soil)	TBD	Precision	± 30% RPD (water) ± 50% RPD (water)

QAPP Worksheet #29: Project Documents and Records Table

Sample Collection Documents and Records	Analysis Documents and Records	Data Assessment Documents and Records	Other
• Site and field logbooks • COC forms • Field Data Sheets • GIS map for sampling locations • Photographs	• Sample receipt logs • Internal and external COC forms • Equipment calibration logs • Sample preparation worksheets/logs • Sample analysis worksheets/run logs • Telephone/email logs • Corrective action documentation	• Data validation reports • Field inspection checklist(s) • Laboratory Audit checklist (if performed) • Review forms for electronic entry of data into database • Corrective action documentation • Laboratory Final Data	Project Analysis Form

QAPP Worksheet #30: Analytical Services Table

Matrix	Analytical Group	Concentration Level	Analytical SOP	Data Package Turnaround Time	Laboratory/Organization (Name and Address, Contact Person and Telephone Number)	Backup Laboratory/ Organization (Name and Address, Contact Person and Telephone Number)
Soil	VOCs SVOCs	Low/Medium	L-A- 101 L-A-201	24 hours preliminary / 3 weeks Hard copy data package	PHILIS	NA
Water (samples, Rinsate Blank or Trip Blank)	VOCs SVOCs	Low	L-A-101 L-A-201	TBD	PHILIS	NA

NA – Not Applicable
TBD – To Be Determined

QAPP Worksheet #31: Planned Project Assessments Table

Assessment Type	Frequency	Internal or External	Organization Performing Assessment	Person(s) Responsible for Performing Assessment (Title and Organizational Affiliation)	Person(s) Responsible for Responding to Assessment Findings (Title and Organizational Affiliation)	Person(s) Responsible for Identifying and Implementing Corrective Actions (Title and Organizational Affiliation)	Person(s) Responsible for Monitoring Effectiveness of Corrective Actions (Title and Organizational Affiliation)
Laboratory Technical Systems	Every Year	External	Regulatory Agency	Regulatory Agency	PHILIS Project Manager	PHILIS Project Manager	EPA or other Regulatory Agency
Performance Evaluation Samples**	NA	External	Regulatory Agency	Regulatory Agency			
Peer Review	Each Deliverable	Internal	Weston Solutions, Inc.	QAO, Group Leader, and Readiness Coordinator	TBD	TBD	EPA OSC and/or EPA QAO

Note: Weston use all subcontracted laboratories participated in nationally accepted accreditation program.
** Weston Solutions, Inc., RST 3 office does not supply the PE samples.

QAPP Worksheet #32: Assessment Findings and Corrective Action Responses

Assessment Type	Nature of Deficiencies Documentation	Individual(s) Notified of Findings (Name, Title, Organization)	Timeframe of Notification	Nature of Corrective Action Response Documentation	Individual(s) Receiving Corrective Action Response (Name, Title, Org.)	Timeframe for Response
Project Readiness Review	Checklist or logbook entry	TBD	Immediately to within 24 hours of review	Checklist or logbook entry	RST 3 SPM	Immediately to within 24 hours of review
Field Observations/ Deviations from Work Plan	Logbook	TBD	Immediately to within 24 hours of deviation	Logbook	RST 3 SPM and EPA OSC	Immediately to within 24 hours of deviation
Laboratory Technical Systems/ Performance Audits	Written Report	PHILIS Project Manager	30 days	Letter	CLP and Non-CLP Laboratory	14 days
On-Site Field Inspection	Written Report	TBD	7 calendar days after completion of the audit	Letter/Internal Memorandum	Contractor regional QAO and/or EPA OSC	To be identified in the cover letter of the report
Performance Evaluation Samples	Electronic Report	PHILIS Project Manager	30 days	Letter or Written Report	CLP and Non-CLP /RST 3-Procured Laboratories	14 days
Peer Review	Deliverables	TBD	Prior to deliverable due date	Comments directly on deliverable	SPM, Weston Solutions, Inc.	Prior to deliverable due date

QAPP Worksheet #33: QA Management Reports Table

Type of Report	Frequency (daily, weekly, monthly, quarterly, annually, etc.)	Projected Delivery Date(s)	Person(s) Responsible for Report Preparation (Title and Organizational Affiliation)	Report Recipient(s) (Title and Organizational Affiliation)
CLP and Non-CLP/RST 3-procured laboratories data (preliminary)	As performed	24 hours for sampling data	CLP and Non-CLP/RST 3-procured laboratories; RST 3 Data Validators	Site Project Manager
Non-CLP/RST 3-procured laboratories data (unvalidated)	As performed	Up to 21 days after receipt of unvalidated data	Non-CLP and RST 3-procured laboratories; RST 3 Data Validators	Site Project Manager
Laboratory Technical Systems/ Performance Audits	As performed	Unknown	EPA or other Regulatory Agency	Lab QA Manager
On-Site Field Inspection	As performed	7 calendar days after completion of the inspection	Site Project Manager, Weston Solutions, Inc.	Site Project Manager
Field Change Request	As required per field change	Three days after identification of need for field change	Site Project Manager, Weston Solutions, Inc.	EPA OSC
Final Report	As performed	2 to 4 weeks after receipt of EPA approval of data package	Site Project Manager, Weston Solutions, Inc.	EPA OSC

QAPP Worksheet #34: Verification (Step I) Process Table

Verification Input	Description	Internal/ External	Responsible for Verification (Name, Organization)
Site/field logbooks	Field notes will be prepared daily by the RST 3 Site Project Manager and will be complete, appropriate, legible and pertinent. Upon completion of field work, logbooks will be placed in the project files.	I	Site Project Manager
Chains of custody	COC forms will be reviewed against the samples packed in the specific cooler prior to shipment. The reviewer will initial the form. An original COC will be sent with the samples to the laboratory, while copies are retained for (1) the Sampling Trip Report and (2) the project files.	I	Site Project Manager
Sampling Trip Reports	STRs will be prepared for each week of field sampling [for which samples are sent to an EPA CLP RAS laboratory.] Information in the STR will be reviewed against the COC forms, and potential discrepancies will be discussed with field personnel to verify locations, dates, etc.	I	Site Project Manager
Laboratory Preliminary Data	Preliminary data – limited review for either contract compliance or technical compliance.	E	PHILIS Project Manager
Laboratory analytical data package	Data packages will be reviewed/verified internally by the laboratory performing the work for completeness and technical accuracy prior to submittal.	E	PHILIS Project Manager
Laboratory analytical data package	Data packages will be reviewed as to content and sample information upon receipt by EPA.	I/E	Data Validation Personnel
Final Sample Report	The project data results will be compiled in a sample report for the project. Entries will be reviewed/verified against hardcopy information.	I	Site Project Manager

QAPP Worksheet #35: Validation (Steps IIa and IIb) Process Table

Step IIa/IIb	Validation Input	Description	Responsible for Validation (Name, Organization)
IIa	SOPs	Ensure that the sampling methods/procedures outlined in QAPP were followed, and that any deviations were noted/approved.	Site Project Manager
IIb	SOPs	Determine potential impacts from noted/approved deviations, in regard to PQOs.	Site Project Manager
IIa	Chains of custody	Examine COC forms against QAPP and laboratory contract requirements (e.g., analytical methods, sample identification, etc.).	TBD
IIa	Laboratory data package	Examine packages against QAPP and laboratory contract requirements, and against COC forms (e.g., holding times, sample handling, analytical methods, sample identification, data qualifiers, QC samples, etc.).	TBD
IIb	Laboratory data package	Determine potential impacts from noted/approved deviations, in regard to PQOs. Examples include PQLs and QC sample limits (precision/accuracy).	TBD
IIb	Field duplicates	Compare results of field duplicate (or replicate) analyses with RPD criteria	TBD

QAPP Worksheet #36: Validation (Steps IIa and IIb) Summary Table

Step IIa/IIb	Matrix	Analytical Group	Concentration Level	Validation Criteria	Data Validator (title and organizational affiliation)
IIa / IIb	Soil/Sediment/ Aqueous	VOCs SVOCs	Trace	Data Validation SOP for Organic Analysis of Trace Concentration VOCs under SOW SOM01.2	TBD
IIa / IIb	Soil/Sediment/ Aqueous	VOCs SVOCs	Low and Medium	Data Validation SOP for Organic Analysis of Low/Medium Concentration VOCs under SOW SOM01.2	TBD

Note: All aqueous samples are rinse blank samples. MS/MSD and field duplicate samples will not be collected.

QAPP Worksheet #37: Usability Assessment

Summarize the usability assessment process and all procedures, including interim steps and any statistics, equations, and computer algorithms that will be used: Data, whether generated in the field or by the laboratory, are tabulated and reviewed for Precision, Accuracy, Representativeness, Completeness, and Comparability (PARCCS) by the SPM for field data or the data validator for laboratory data. The review of the PARCC Data Quality Indicators (DQI) will compare with the DQO detailed in the site-specific QAPP, the analytical methods used and impact of any qualitative and quantitative trends will be examined to determine if bias exists. A hard copy of field data is maintained in a designated field or site logbook. Laboratory data packages are validated, and final data reports are generated. All documents and logbooks are assigned unique and specific control numbers to allow tracking and management.

Where applicable, the following documents will be followed to evaluate data for fitness in decision making: EPA QA/G-4, *Guidance on Systematic Planning using the Data Quality Objectives Process,* EPA/240/B-06/001, February 2006, and EPA QA/G-9R, *Guidance for Data Quality Assessment*, A reviewer's Guide EPA/240/B-06/002, February 2006.

Describe the evaluative procedures used to assess overall measurement error associated with the project:
As delineated in the ***Uniform Federal Policy for Implementing Environmental Quality Systems: Evaluating, Assessing and Documenting Environmental Data Collection and Use Programs Part 1: UFP-QAPP (EPA-505-B-04-900A, March 2005); Part 2A: UFP-QAPP Workbook (EPA-505-B-04-900C, March 2005); Part 2B: Quality Assurance/Quality Control Compendium: Non-Time Critical QA/QC Activities (EPA-505-B-04-900B, March 2005);*** "Graded Approach" will be implemented for data collection activities that are either exploratory or where specific decisions cannot be identified, since this guidance indicates that the formal DQO process is not necessary.

QAPP Worksheet #37: Usability Assessment- (Concluded)

The analytical results from the soil sampling event will be utilized by EPA in verifying if subsurface soil is contaminated with site related contaminants and if so, determine additional removal action scope of work to address the contamination. Analytical results from air samples will be used to determine efficiency of SVE system.

Identify the personnel responsible for performing the usability assessment: Site Project Management Team, Data Validation Personnel, and EPA Region 2 OSC

Describe the documentation that will be generated during usability assessment and how usability assessment results will be presented so that they identify trends, relationships (correlations), and anomalies:

A copy of the most current approved QAPP, including any graphs, maps and text reports developed will be provided to all personnel identified on the distribution list.

ATTACHMENT A

Figure 1: Site Location Map

ATTACHMENT B

Sampling SOPs

EPA ERT SOP # 2001: General Field Sampling Guidelines
EPA ERT SOP # 2009: Drum Sampling
EPA ERT SOP # 2010: Tank Sampling
EPA ERT SOP # 2012: Soil Sampling

ATTACHMENT C

EPA Regional Removal Management Level (RML) Summary Table, 2016